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EXAMINER

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
1764	10

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/877,249	BECKER ET AL.
	Examiner Jennifer A. Leung	Art Unit 1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on \_\_\_\_.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-46 is/are pending in the application.  
 4a) Of the above claim(s) 22-46 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-21 is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) 1-46 are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 11) The proposed drawing correction filed on \_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.  
 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.  
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) The translation of the foreign language provisional application has been received.  
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 25.6.  
 4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of claims 1-21 in Paper No. 9 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "means for detecting the presence of inert fluid" of claim 8, the "means for detecting molecular oxygen-containing gas" of claim 9, and "a safety purge" of claim 19 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held

in abeyance. Furthermore, the drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings.

*Specification*

4. The disclosure is objected to because of the following informalities:
  - a. Page 8, line 6: "Figure 2 shows" should be changed to -- Figures 2a, 2b, and 2c show -- for proper reference to the drawings.
  - b. Page 8, line 9: -- (14) -- should be inserted after "a supply of inert gas" for proper reference to the drawings.
  - c. Page 8, line 10: -- or restriction -- should be inserted after "orifice plate" for consistency in terminology, as set forth on page 5, line 17.

Appropriate correction is required. Furthermore, the specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

*Claim Objections*

5. Claims 1-2 are objected to because of the following informalities:
  - a. With respect to claim 1, -- inlet -- should be inserted after "a substantial portion of said" for consistency and clarity in claim terminology (line 3).
  - b. With respect to claim 2, "the" should be omitted to eliminate redundancy in claim language (line 1).

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, it is unclear as to where the body of the claim begins as there is no transitional indicator (ie. comprising:). Also, it is unclear as to the structural relationship between the “at least one inlet pipe” (line 2) and the other elements of the apparatus.

With respect to claim 5, “one or more” (line 3) is considered vague and indefinite.

With respect to claim 6, it is unclear as to the structural relationship between “means allowing for differential expansion” (lines 1-2) and the other elements of the apparatus.

With respect to claim 7, it is unclear as to the structural relationship between “means for detecting a change in pressure” (lines 1-2) and the other elements of the apparatus.

With respect to claim 8, it is unclear as to the structural relationship between the “means for detecting the presence of inert fluid” (lines 1-2) and the other elements of the apparatus.

Furthermore, “gaseous effluent” (line 2) lacks proper positive antecedent basis.

With respect to claim 9, it is unclear as to the structural relationship between the “means for detecting molecular oxygen-containing gas” (lines 1-2) and the other elements of the apparatus. Furthermore, “molecular oxygen-containing gas” (line 2) lacks proper positive antecedent basis as it is merely recited in the intended use clause of claim 1, line 2.

With respect to claim 10, it is unclear as to what applicants are attempting to recite by, "means for suppressing ingress" (lines 1-2). Also, it is unclear as to the structural relationship between the "means for suppressing ingress" and the other elements of the apparatus. Furthermore, "flame", "reagents", "products" and "catalyst" (lines 2-3) lack proper positive antecedent basis. Also, "catalyst" is merely recited in the intended use clause of claim 1, line 2.

With respect to claim 11, it is unclear as to the structural relationship between "means for providing molecular oxygen-containing gas" (lines 1-2) and the other elements of the apparatus. Furthermore, "molecular oxygen-containing gas" lacks proper positive antecedent basis as it is merely recited in the intended us clause of claim 1, line 2.

With respect to claim 12, it is unclear as to the structural relationship between "a restriction" and the other elements of the apparatus. Furthermore, "the outlet" (line 2) lacks proper positive antecedent basis.

With respect to claim 14, it is unclear as to what structural limitation the applicants are attempting to recite by, "said restriction is located ... such that a potential detonation is avoided."

With respect to claim 16, "the region" (line 1) lacks proper positive antecedent basis.

With respect to claim 17, it is unclear as to the structural relationship between the "more than one inlet pipe" and the other elements of the apparatus. The examiner suggests changing the claim to read, -- A reactor as claimed in claim 1, wherein said at least one inlet pipe comprises a plurality of inlet pipes. --.

With respect to claim 18, "the distance" (line 1) and "the potential flame length" (line 2) lack proper positive antecedent basis. Furthermore, it is unclear as to what structural limitation

the applicants are attempting to recite by, "the distance between inlets is significantly in excess of the potential flame length." Also, "significantly in excess" is considered vague and indefinite.

With respect to claim 19, "said molecular oxygen-containing gas" (line 1) lacks proper positive antecedent basis as it is merely recited in the intended use clause of claim 1, line 2. Furthermore, it is unclear as to the structural relationship between "a common end box" (line 2) and the other elements of the apparatus. Likewise, "a safety purge" (line 3). Furthermore, "low" (line 2) is a relative term and is therefore considered vague and indefinite.

With respect to claim 20, it is unclear as to what the applicants are attempting to recite by, "operably connected" (lines 1-2). Furthermore, "the flow" (line 3) lacks proper positive antecedent basis. Furthermore, it is unclear as to the structural relationship between the "one or more flow restriction means" and the other elements of the apparatus. Furthermore, "adapted to be" (line 1) is considered vague and indefinite.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Gross et al. (U.S. 5,451,247).

With respect to claim 1, Gross et al. disclose a reactor **4** comprising at least one inlet pipe **2** for an oxygen-containing gas (column 2, lines 31-32), wherein pipe **2** has means **3** for surrounding a substantial portion of the inlet pipe **2** with an inert fluid (column 2, lines 33-36).

With respect to claim 2, at least 85% of the inlet pipe 2 in the reactor 4 is surrounded by the surround means 3 (see Fig. 1).

With respect to claims 3 and 4, no apparatus limitation is given. However, Gross et al. further disclose that the inert fluid comprises an inert gas, namely nitrogen, carbon dioxide, or argon (column 2, lines 33-39).

With respect to claim 5, Gross et al. further disclose that the surround means comprises an outer pipe 3 surrounding a substantial portion of the inlet pipe 2, wherein inert fluid is provided (column 2, lines 32-36).

With respect to claim 6, Gross et al. disclose means for allowing for differential expansion (FIG. 2) of the inlet pipe 2 and surround means 3, which is disclosed in the instant specification as comprising “bends in the inlet pipe”, (page 4, lines 5-7).

With respect to claim 10, Gross et al. disclose means for suppressing ingress to the inlet pipe from the reactor of reagents and product (column 1, lines 49-63).

Instant claims 1-6 and 10 structurally read on the apparatus of Gross et al.

8. Claims 1-5 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Huggins et al. (U.S. 4,554,078).

With respect to claim 1, Huggins et al. disclose a reactor 90 comprising at least one inlet pipe 94, wherein said inlet pipe has means 96 for surrounding a substantial portion of the pipe in the reactor with an inert fluid (column 6, line 68 - column 7, line 3).

With respect to claim 2, Huggins et al. disclose that at least 85% of the pipe is surrounded by the surround means (see FIG. 6).

With respect to claim 3, no apparatus limitation is given. However, Huggins et al. further disclose that the inert fluid comprises an inert gas (column 4, lines 34-40).

With respect to claim 4, no apparatus limitation is given. However, Huggins et al. further disclose that the inert gas preferred comprises nitrogen, carbon or argon (column 4, lines 34-40).

With respect to claim 5, Huggins et al. disclose that the surround means comprises an outer pipe **96** supplied with an inert fluid surrounding a substantial portion of the inlet **94** in the reactor (column 6, line 68 - column 7, line 3).

With respect to claim 10, Huggins et al. disclose a means for suppressing ingress to the inlet pipe from the reactor of reagents and product (column 4, lines 27-40).

Instant claims 1-5 and 10 structurally read on the apparatus of Huggins et al.

9. Claims 1-5, 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by McGeever et al. (U.S. 5,866,095).

With respect to claim 1, McGeever et al. disclose a reactor **10** for a heterogeneous gas-phase reaction comprising at least one inlet pipe **32** for introducing an oxygen-containing gas (column 7, lines 16-17), wherein said inlet pipe **32** has means **40** for surrounding a substantial portion of said inlet pipe **32** with an inert fluid (column 2, lines 28-33).

With respect to claim 2, McGeever et al. disclose at least 85% of said pipe surrounded by said surround means (see FIG. 1).

With respect to claims 3 and 4, no apparatus limitation is given. However, McGeever et al. disclose that the inert fluid comprises an inert gas, namely argon (column 2, lines 28-33).

With respect to claim 5, McGeever et al. disclose that said surround means comprises an outer pipe **40** surrounding a substantial portion of the inlet pipe **32** (column 4, lines 43-51), wherein the inert fluid (column 2, lines 28-33) is fed to the surround means.

With respect to claim 17, McGeever et al. disclose more than one inlet pipe (column 4, lines 53-56).

With respect to claim 20, McGeever et al. disclose the inlet pipe **68** adapted to be operably connected (via **74**) to a supply **38** of oxygen containing gas through one or more flow restriction means **72**, which restrict the flow of oxygen to the inlet pipe **68** (FIG. 2).

Instant claims 1-5, 17 and 20 structurally read on the apparatus of McGeever et al.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1, 10, 11, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al. (U.S. 5,801,265) in view of Huggins et al. (U.S. 4,554,078).

With respect to claim 1, Wagner et al. discloses a reactor **36** for containing a solid catalyst comprising an inlet pipe **26** for oxygen containing gas (column 2, lines 26-40). However, Wagner et al. are silent as to an inlet pipe wherein said pipe has means for surrounding a substantial portion of the pipe with an inert fluid.

Huggins et al. teach an inlet pipe **94** to a reactor **90** wherein said pipe **94** has means **96** for surrounding a substantial portion of the pipe with an inert fluid (column 6, line 68 - column 7, line 3).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the pipe with surround means to the apparatus of Wagner et al. because the surround means prevents reaction products and treating material from contacting the inlet pipe in order to minimizes tube blockage, as taught by Huggins et al.

With respect to claim 10, the same comments with respect to Wagner et al. and Huggins et al. apply. Also, Huggins et al. further teaches that the surround means as stated above prevents ingress to the inlet pipe from the reactor of reagents and products (column 2, lines 45-47).

With respect to claim 11, the same comments with respect to Wagner et al. and Huggins et al. apply. Furthermore, Wagner et al. disclose means for providing oxygen flow at a jet

velocity, thereby at increased pressure, great enough to prevent a convective or diffusive flow of the reactant feed into the inlet (column 5, lines 33-39).

With respect to claim 21, the same comments with respect to Wagner et al. and Huggins et al. apply. Furthermore, Wagner et al. disclose a fluidized bed **34** reactor **36**. In any event, it has been held obvious to use fluidized bed reactors in lieu of other reactors. *In re Edwards* 109 USPQ 380 (CCPA 1956).

11. Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al. (U.S. 5,801,265) in view of Huggins et al. (U.S. 4,554,078), as applied to claim 1 above, and in further view of in view of Gensini et al. (U.S. 5,802,097).

The same comments with respect to Wagner et al. and Huggins et al. apply. However, they are silent as to a means for detecting a change in pressure of said inert fluid surround said inlet pipe.

Gensini et al. teaches a furnace **10** having an oxygen inlet **13**, with means for detecting a change in pressure of the inert fluid surrounding the inlet pipe (column 8, lines 18-40; FIG. 10).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the means for detecting a change in pressure to the modified apparatus of Wagner et al. because the detection means enables the process conditions to be known and allows for regulation of the ratio of oxygen to inert gas flow to be substantially unchanged, as taught by Gensini et al.

12. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al. (U.S. 5,801,265) in view of Huggins et al. (U.S. 4,554,078), as applied to claim 1 above, and further view of in view of Richardson (U.S. 5,297,419).

With respect to claim 8, the same comments with respect to Wagner et al. and Huggins et al. apply. However, collectively they are silent as to a means for detecting the presence of inert fluid in the gaseous effluent from the reactor.

Richardson teaches an analyzer **10** for analyzing and displaying the concentration of a pressurized gas flowing through a delivery line in relationship to a reference gas (column 1, lines 42-51). In particular, Richardson teaches measurement of inert gases such as carbon dioxide and nitrogen (column 2, lines 56-61).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the analyzer to the modified apparatus of Wagner et al. because gas analyzers are useful machines often used for measuring the content of gas mixtures in industry, as taught by Richardson (ie, for detection and control of process upsets).

With respect to claim 9, the same comments with respect to Wagner et al. and Huggins et al. apply. However, collectively they are silent as to a means for detecting the presence of oxygen containing gas in the inert fluid surround the inlet pipe.

Richardson teaches an analyzer **10** for analyzing and displaying the concentration of a pressurized gas flowing through a delivery line in relationship to a reference gas (column 1, lines 42-51). In particular, Richardson teaches measurement of a concentration of oxygen in argon and nitrogen gases **26** (column 2, lines 56-61).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the analyzer to the modified apparatus of Wagner et al. because gas analyzers are useful machines often used for measuring the content of gas mixtures in industry, as taught by Richardson (ie, for detection and control of process upsets).

13. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al. (U.S. 5,801,265) in view of Huggins et al. (U.S. 4,554,078), as applied to claims 1 and 10, and further view of Hayner (U.S. 3,750,710).

With respect to claim 12, the same comments with respect to Wagner et al. and Huggins et al. apply. However, collectively they are silent as to the ingress suppression means comprising a restriction to the outlet of the inlet pipe.

Hayner et al. teaches a restrictor **13** for insertion in a confined fluid flow path **11**.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a restriction to the modified apparatus of Wagner et al. because the flow restrictors provide a means for measuring the rate of fluid flow through an inlet pipe, and therefore can be incorporated with control apparatus, as taught by Hayner et al.

With respect to claim 13, the same comments apply. However, Wagner et al. and Huggins et al. are silent as to a restriction comprising one or more orifices.

The same comments with respect to Hayner apply. Furthermore, Hayner teaches that the restrictor **13** comprises one or more orifices **14, 15**.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a restrictor having one or more orifices to the modified apparatus of

Wagner et al. because the orifices effectively increase the area of flow through the restrictor and allow changes in size of the conduit depending on the flow rate expected and pressure drop required, as taught by Hayner.

With respect to claim 14, the same comments with respect to Wagner, Huggins, and Hayner apply. However, collectively they are silent as to the restrictor located at a distance from the outlet of the inlet pipe such that a potential detonation is avoided. Nonetheless, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the restrictor at such location since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Furthermore, shifting of the location of parts involves only ordinary skill in the art. *In re Japikse*, 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950).

With respect to claim 15, the same comments with respect Wagner, Huggins, and Hayner apply. However, collectively they are silent as to a restriction located 4 to 5 pipe diameters from the end of the inlet pipe. Nonetheless, it would have been obvious for one of ordinary skill in the art at the time the invention was made to place the restrictions at 4 to 5 pipe diameters from the end of the inlet pipe since it has been held that discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 23. and that shifting of the location of parts involves only ordinary skill in the art. *In re Japikse*, 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950).

With respect to claim 16, the same comments with respect Wagner, Huggins, and Hayner apply. However, collectively they are silent as to a restriction located within the region of the

inlet pipe surrounded by the means for surrounding said inlet pipe with inert fluid. Nonetheless, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the restriction at a location within the region of the inlet pipe surrounded by the sound means since it has been held that discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 23. and that shifting of the location of parts involves only ordinary skill in the art. *In re Japikse*, 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950).

14. Claims 18 rejected under 35 U.S.C. 103(a) as being unpatentable over McGeever et al. (U.S. 5,866,095) in view of Wagner et al. (U.S. 5,801,265).

The same comments with respect to McGeever et al. apply. However, McGeever et al. are silent as to a distance between inlets significantly in excess of the potential flame length.

Wagner et al. disclose reactor **36** with a plurality of oxygen gas inlets **60**, wherein the inlets **60', 60''** are positioned such that the distance **D** between inlets **60', 60''** is significantly in excess of the potential flame length (FIG. 3; column 4, lines 15-38).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the oxygen gas inlets at a distance significantly in excess of the potential flame length to the apparatus of McGeever et al. because the arrangement provides an improved system for introducing oxygen containing gas to a reactor that avoids explosions, deflagration, or other anomalous process conditions, as taught by Wagner et al.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over McGeever et al. (U.S. 5,866,095) in view of Hyde et al. (U.S. 3,772,000), Nickerson et al. (U.S. 4,117,885) and Wagner et al. (U.S. 5,801,265).

The same comments with respect to McGeever et al. apply. However, McGeever et al. are silent as to inlet pipes provided from a common end box of low inventory.

Hyde et al. teach a common end box **25** in fluid communication with oxygen inlet pipes **23** to the reactor **10** (column 4, lines 21-30).

Nickerson et al. further teach motivation for supplying a common end box or inventory chamber (column 1, lines 13-26).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the common end box to the apparatus of McGeever et al. because the common end box allows an inventory of working fluid, in this case oxygen gas, to be contained in the system at any time, as taught by Nickerson et al.

The same comments with respect to McGeever et al., Hyde et al., and Nickerson et al. apply. However, collectively they are silent as to an optional safety purge during shut-down.

Wagner et al. teach a safety purge, in the form of a critical flow orifice and valve **28**, provided in the oxygen flow line (column 5, lines 3-19).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the safety purge to the modified apparatus of McGeever et al. because the safety purge prevents the oxygen feed concentration from building up to a detonable level during emergency process shutdown, as taught by Wagner et al.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian C. Knodel can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

*Hien Tran*

JAL

August 9, 2002

*Jennifer  
Leung*

**HIEN TRAN**  
**PRIMARY EXAMINER**